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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/823,891

04/14/2004

Nathan Gerard Cormier

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07/07/2005

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EXAMINER

VERDIER, CHRISTOPHER M

ART UNIT

PAPER NUMBER

3745

DATE MAILED: 07/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/823,891

Applicant(s)

CORMIER ET AL.

Examiner

Christopher Verdier

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-10, 12-17, 19 and 20 is/are rejected.
- 7) ☒ Claim(s) 4, 11 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1-5-05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

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***Specification***

The disclosure is objected to because of the following informality: Appropriate correction is required.

In paragraph 3, second to last line, "air foil" should be changed to -- airfoil --.

***Examiner's Suggestions to Claim Language***

The following are suggestions to improve the clarity and precision of the claims:

In claim 12, line 1, "said" may be changed to -- a --.

In claim 13, line 1, "said" may be changed to -- a --.

In claim 13, line 4, "said" (first occurrence) may be changed to -- a --.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 5-7, and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lasche 1,534,721 in view of Tomko 6,352,405. Lasche (figures 1 and 4) discloses a method comprising providing plural stator vanes sectors (the upper half near 12 and the lower half near 14) that each include an equal number of stator vanes 8 that are circumferentially spaced apart such that a first circumferential spacing is defined between each pair of adjacent stator vanes within the sector, with a large second circumferential spacing defined between each pair of adjacent stator vanes coupled to adjacent sectors, with the second circumferential spacing being different from the first circumferential spacing. The second circumferential spacing is greater than the first circumferential spacing. Lasche also discloses a stator vane assembly comprising plural stator vane sectors that each comprise an equal number of circumferentially-spaced stator vanes oriented such that a first circumferential spacing is defined between each pair of adjacent stator vanes within each sector, with a large second circumferential spacing defined between each pair of adjacent stator vanes coupled to adjacent sectors, with the second circumferential spacing being different from the first circumferential spacing. Column 2, lines 85-87 states that it is preferable to use a considerable number of groups of nozzles. Each of the plural vane sectors comprises a first end and an opposite second end, with each of the first and second ends comprising an end stator vane, adjacent stator vane sectors formed such that adjacent end stator vanes coupled to respective stator vane sectors are separated by the second circumferential spacing. The sectors form a circumferential assembly. The recitation in claim 1, line 1 of “a

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method of assembling a gas turbine engine” has not been given patentable weight, because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). The recitation in claim 5, line 1 of “for a gas turbine engine” is a recitation of intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963).

However, Lasche does not disclose that the stator vane sectors are coupled together (claims 1 and 5), and does not disclose that there at least four stator vane sectors coupled together (claims 2 and 9).

Tomko (figure 1) shows a turbine diaphragm 12 having unnumbered nozzle vanes, the diaphragm having two sectors, an upper sector 15 and a lower sector 14, coupled together via joint bolts 74, for the purpose of securely fastening the diaphragm sectors together.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the vane sectors of Lasche such that they are bolted together, as taught by Tomko, for the purpose of securely fastening the diaphragm sectors together.

The recitation in claims 2 and 9 of there being at least four stator vanes sectors coupled together is a matter of choice in design. Lasche (column 2, lines 68-87) states that it is preferable to use a large number of groups of nozzles, for the purpose of preventing the blades from entering resonance. It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to select the specific number of vane sectors (nozzle groups) to be a specific value, such as four, for the purpose of preventing the blades from entering resonance.

Claims 8 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lasche 1,534,721 and Tomko 6,352,405 as applied to claim 5 above. The modified stator vane assembly of Lasche shows all of the claimed subject matter, including a rotor disk 2 that comprises plural circumferentially spaced rotor blades 3, with the second circumferential spacing facilitating reducing a vibration response induced to the plural rotor blades, and inducing a phase shift in a vane wake to facilitate reducing a vibration response of the plural rotor blades (see column 2, lines 68-87). However, the modified stator vane assembly of Lasche does not show the stator vane sectors defining a portion of a flow path extending through a gas turbine engine.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to apply the modified stator vane assembly of Lasche to a flow path in a gas turbine engine, because Lasche teaches that his arrangement is an impulse turbine, and one of ordinary skill in the art would have recognized that a flow path extending through a gas turbine engine experiences the same resonance conditions which Lasche is solving, due to the fact that both an impulse turbine and a gas turbine engine have analogous rotor blades and stator vanes which produce similar resonant conditions.

Claims 14-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lasche 1,534,721 in view of Tomko 6,352,405. Lasche (figures 1 and 4) discloses a stator vane assembly with a rotor disk 2 positioned in a flow path, the rotor disk having plural circumferentially-spaced apart rotor blades 3, with a stator vane assembly 5 positioned in the flow path downstream of the rotor disk (note that there are plural unnumbered upstream rotor stages 2), with the stator vane assembly comprising plural stator vane sectors (the upper half near 12 and the lower half near 14) that each comprise an equal number of circumferentially-spaced stator vanes 8 oriented such that a first circumferential spacing is defined between each pair of adjacent stator vanes within each sector, with a large second circumferential spacing defined between each pair of adjacent stator vanes coupled to adjacent sectors, with the second circumferential spacing being different from the first circumferential spacing. Column 2, lines 85-87 states that it is preferable to use a considerable number of groups of nozzles. Each of the plural vane sectors comprises a first end and an opposite second end, with each of the first and second ends comprising an end stator vane, adjacent stator vane sectors formed such that

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adjacent end stator vanes coupled to respective stator vane sectors are separated by the second circumferential spacing. The second circumferential spacing is greater than the first circumferential spacing. The second circumferential spacing facilitates reducing a vibration response induced to the plural rotor blades, and facilitates inducing a phase shift in a vane wake to facilitate reducing a vibration response of the plural rotor blades (see column 2, lines 68-87). The recitation in claim 14, line 1 of “a gas turbine engine” has not been given patentable weight, because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

However, Lasche does not disclose a compressor that defines an annular flow path, with the stator vane assembly positioned in the flowpath, does not disclose that the stator vane sectors are coupled together (claims 14 and 15), and does not disclose that there at least four stator vane sectors coupled together (claim 16).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to apply the stator vane assembly of Lasche to a flow path in a compressor, because Lasche teaches that his arrangement is an impulse turbine, and one of ordinary skill in the art would have recognized that a flow path extending through a compressor



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experiences the same resonance conditions which Lasche is solving, due to the fact that both a compressor and an impulse turbine have analogous rotor blades and stator vanes which produce similar resonant conditions.

Tomko (figure 1) shows a turbine diaphragm 12 having unnumbered nozzle vanes, the diaphragm having two sectors, an upper sector 15 and a lower sector 14, coupled together via joint bolts 74, for the purpose of securely fastening the diaphragm sectors together.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified vane sectors of Lasche such that they are bolted together, as taught by Tomko, for the purpose of securely fastening the diaphragm sectors together.

The recitation in claim 16 of there being at least four stator vanes sectors coupled together is a matter of choice in design. Lasche (column 2, lines 68-87) states that it is preferable to use a large number of groups of nozzles, for the purpose of preventing the blades from entering resonance. It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to select the specific number of vane sectors (nozzle groups) to be a specific value, such as four, for the purpose of preventing the blades from entering resonance.

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***Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mielke is cited to show a compressor stator with four to six sectors per compressor casing half.

***Allowable Subject Matter***


Claims 4, 11, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.V.  
July 3, 2005

  
Christopher Verdier  
Primary Examiner  
Art Unit 3745